IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF TENNESSEE

EMPLOYERS INSURANCE COMPANY OF WAUSAU,	**NO. 3:06-0611**
Plaintiff,	
v.	**Judge Wiseman**
MEDLINE INDUSTRIES, INC., AND CREATIVE BEDDING TECHNOLOGIES, INC.,	**Magistrate Judge Bryant**
Defendants.	

AFFIDAVIT OF DR. HARRI KYTOMAA

1. I, Dr. Harri Kytomaa, state that I have personal knowledge of the facts stated in this Affidavit and if called as a witness to testify, I would and could competently testify to the following.

2. I am currently Corporate Vice President and am the Director of the Thermal Science practice with E^{x}ponent, Inc. I apply my expertise to the investigation and prevention of fires and explosions, and the determination of their cause and origin.

3. I received a Bachelors of Science Degree in Engineering Service from Durham University in England and graduated with Honors in 1979. I thereafter received a Masters Degree in Mechanical Engineering from California Institute of Technology in 1981, and a Ph.D. in Mechanical Engineering from California Institute of Technology in 1986.

4. Among other credentials and professional honors relative to the issues in the present case, I have a Fire Investigation 1A Certification accredited by the California State Fire Marshal, I am a member of the American Society of Mechanical Engineers, I am a member of the Society of Fire Protection Engineers, and I am a member of the National Fire Protection Association.

5. I have authored a number of publications and have published a number of reports on issues pertaining to fire analysis and fire origin and cause investigations. My publications, presentations, lectures and reports are detailed in my curriculum vitae, a true and correct copy of which is attached hereto as Exhibit A and incorporated herein by reference.

6. I have routinely been called upon to investigate some of the highest visibility fires nationally and internationally. I have investigated hundreds of fires and explosions in numerous industries and occupancies. These include high rise buildings, warehouses, residential homes, manufacturing facilities, petrochemical facilities, marine transportation units, aircrafts, and

motor vehicles.

7. Through my education, studies, training and experience in investigating fires, I have been exposed to hundreds of different fire scenes. As a result, I have observed, analyzed and evaluated the effects of fire on all different materials and structures, including but not limited to, metals, plastics, wood, brick, concrete, cloth, upholstery, framing, drywall, tile, ceramics, clothing, wiring, glass, and others. This cumulative experience has given me an understanding of how different materials behave in fires, which I use routinely in investigating fires and explosions.

8. Over the past ten years, I have been qualified to testify as an expert witness in the United States District Court for the Middle District of Pennsylvania, the United States District Court of the District of Columbia, the United States District Court for the Western District of Pennsylvania and state courts in Ohio, Maryland, Alabama, Connecticut, New Jersey, Massachusetts, Pennsylvania, and Arkansas.

9. My education, training, experience, publications, lectures, presentations and reports that further comprise my expertise are detailed in my curriculum vitae, a true and correct copy of which is attached hereto as Exhibit A and incorporated herein by reference.

* * *

10. It is my understanding that Employers Insurance Company of Wausau (Plaintiff) brought the present lawsuit against Medline Industries, Inc. and Creative Bedding Technologies, Inc. (collectively referred to as "Defendants"). In its lawsuit, Plaintiff alleges that a mattress manufactured and/or sold by Defendants was involved in a fire occurring at the NHC Nashville nursing home on September 25, 2003. It is my understanding that the mattress in question was occupied by Ana Tolston (the "victim"), who was located in Room 221 of the nursing home facility and was occupying "Bed B", the one closest to the window.

11. Plaintiff has admitted in its interrogatory answers that the mattress in question was completely consumed in the fire and that there are no remnants of the mattress available for physical inspection.

12. It is my understanding that even though the mattress was consumed in the fire and cannot be physically identified, Plaintiff has alleged in this lawsuit that the mattress in question was a "Nylex II Innerspring Mattress with Convoluted Foam" manufactured by Creative Bedding Technologies and sold to NHC Nashville by Medline Industries in either 1996 or 1997. It is also my understanding from the discovery in this case that the only type of mattress manufactured and/or sold by Defendants to NHC Nashville in 1996 and 1997 was the "Nylex II Innerspring Mattress with Convoluted Foam."

13. Since the actual mattress was consumed in the fire and cannot be physically identified, I was asked to investigate, analyze and determine whether a Nylex II Innerspring Mattress with Convoluted Foam was the mattress on the victim's bed-frame as the Plaintiff alleges, or whether it was some other type of mattress.

14. The composition of the Nylex II Innerspring Mattress with Convoluted Foam (hereinafter "Nylex II") is critical to my analysis. The Nylex II mattress has a steel innerspring array which is surrounded by foam, and then covered with an external ticking material. The steel innerspring component is an integral array of coils. In other words, the coils of the innerspring are connected and form one integral component. The innerspring coil array comprises a substantial portion of the mattress – it runs almost the entire length and width of the mattress and is designed to measure approximately 31 inches x 71 inches.

15. Attached hereto as Exhibit B are photographs of the interior of an exemplar Nylex II mattress that depict the innerspring array. It is my understanding that these photographs were taken by Plaintiff's attorney at an exemplar mattress inspection in Nashville, Tennessee on September 26, 2006, and were produced in this litigation by Plaintiff as "WAUSAU 03699"."

16. My hypothesis at the outset was that if the Nylex II mattress was in fact on the bed-frame at issue, as Plaintiff alleges, then the steel innerspring array would have survived the fire. While I would have expected superficial discoloration to the innerspring array and some annealing, there is no question that this 31 inch x 71 inch innerspring array would have maintained its physical composition and would have been plainly visible after the fire.

17. In order to test my hypothesis and determine whether there was a Nylex II mattress on "Bed B", I employed the following methodology:

* * *

18. As an initial matter, I reviewed seventy-two photographs that were taken by Russell Robinson of the Tennessee Bomb and Arson section after the fire. These photographs depict the scene of the fire, including Room 221, the remains of the victim, and the bed frame on which she was found. Photographs 8, 9, 12, 13, 25, 26, 27, 28, 29, 34, 35, 36 and 37 of that set (hereinafter the "victim photographs") are attached hereto as Exhibit C. These victim photographs depict "Bed B" from Room 221, including the victim's remains, the bed frame and the surrounding scene. I made a number of critical findings from these photographs:

i. The victim's remains were still on the bed frame at the time the photographs were taken. This indicates that the victim's remains had not yet been moved and these victim photographs present a true and accurate depiction of the victim and the bed-frame as they existed immediately after the fire was extinguished;

ii. The victim's remains are depicted directly on the bed-frame and bed springs of "Bed B";

iii. The bed-frame and its bed springs survived the fire;

iv. The mattress on "Bed B" was completely consumed in the fire;

v. There is no steel innerspring array depicted in the photographs;

vi. If the Nylex II mattress was on "Bed B" at the time of the fire, as Plaintiff alleges, then it would have maintained its coil array structure and would be clearly visible in these victim photographs. It is not.

19. The victim photographs from the Bomb and Arson Section clearly establish that there was not a Nylex II mattress on "Bed B" at the time of the fire. As stated above, the innerspring array would have remained and would have been plainly visible in the photographs.

* * *

20. Having examined the Bomb and Arson victim photographs (Exhibit C), I wanted to inspect all of the evidence collected from the scene of the NHC Nashville fire. The purpose of inspecting the evidence was to corroborate the Bomb and Arson photographs and further confirm that no innerspring array was recovered from the subject bed-frame. It is my understanding that all of the evidence from the fire has been stored pursuant to a Court Order at two different facilities: (1) Applied Technical Services, Inc. in Marietta, Georgia; and (2) Abbott Self Storage in Nashville, Tennessee.

21. On April 19, 2007, I inspected the physical evidence from the fire scene at Applied Technical Services, Inc. in Marietta, Georgia. Included among the evidence stored at Applied Technical Services was the bed-frame for "Bed B" depicted in the victim photographs. Consistent with the Bomb and Arson photographs, my inspection of the bed-frame revealed that the bed-frame and its springs survived the fire. While there was superficial charring to the bed-frame and its components, and some annealing to the springs, the physical structure of the frame survived the fire and, as expected, was clearly visible in the Bomb and Arson photographs.

22. In addition, there were no remnants of an innerspring coil array at Applied Technical Services. The bed-frame and its components did not have any remnants of an innerspring coil array, and neither did the other evidence stored at Applied Technical Services.

23. This inspection at Applied Technical Services continued to confirm my hypothesis that there was not a Nylex II mattress on "Bed B" at the time of the fire.

24. On June 27, 2007, I inspected the remaining physical evidence from the fire scene at Abbott Self Storage in Nashville, Tennessee. Prior to doing so, I reviewed the inventory of that evidence that was prepared by Metts Hardy of EFI Global, Inc. (Plaintiff's consulting expert) and is attached hereto as Exhibit D. It is my understanding that this inventory documents all of the evidence stored at the Abbott Self Storage facility. Notably, it does not list or reference any mattress innerspring arrays.

25. In order to confirm the accuracy of the inventory, and to further confirm that there was no innerspring coil array recovered from the fire scene, I inspected all of the evidence stored at Abbott Self Storage. Consistent with the inventory, there were no remnants of an innerspring coil array at Abbott Self Storage

26. My inspection of all of the evidence recovered from the fire scene continued to confirm my hypothesis to a reasonable degree of scientific certainty in the field of fire investigation that no innerspring array from a Nylex II mattress was recovered from the scene, and that a Nylex II mattress was not on "Bed B" at the time of the fire.

27. During my inspection in Abbott Self Storage I also inspected fifteen mattresses that were recovered from the second floor wing at NHC Nashville where the fire occurred. (See inventory, Ex. D). Of those fifteen mattresses recovered, five of them were not manufactured or sold by Defendants – one is labeled as a Simmons mattress, two are labeled as Tendercare mattresses, and two are labeled as Span America mattresses. Also, four of those mattress (the Tendercare and Span America mattress) are 100% foam and have no innerspring component. From these observations I draw two conclusions:

i. NHC Nashville used other mattresses on the second floor wing at issue that were not manufactured or sold by Defendants;

ii. NHC Nashville used 100% foam and other mattresses with no innerspring component on the second floor wing at issue. These mattresses were not sold by Defendants.

* * *

28. In order to further confirm my hypothesis that a Nylex II mattress was not on "Bed B" at the time of the fire, I directed and observed fire testing of four mattresses at Intertek ETL SEMKO in Elmendorf, Texas.

29. For the purposes of the mattress fire testing, six total mattresses were specially manufactured by Creative Bedding in accordance with designated specifications. I requested three Nylex II Innerspring Mattresses with Convoluted Foam that had the exact same specifications as those that were sold to NHC Nashville in 1996 and 1997. I also requested three mattresses without an innerspring array that were instead comprised of 100% foam.

30. On May 16, 2007, two Nylex II Innerspring mattresses and two 100% foam mattresses were tested. We intentionally preserved one Nylex II Innerspring mattress and one 100% foam mattress so that Plaintiff's experts can do their own testing if they would like to do so.

31. All four mattresses were tested using the burner configuration set forth in California Technical Bulletin 603 and 16 CFR 1633. The California TB 603 test uses a propane burner designed to simulate the heat flux levels and durations imposed on a mattress and foundation by burning bedclothes (i.e., comforters, sheets, etc.). The burner applies flames to the sides and top of the mattress for varying times. *See Technical Bulletin 603, issued by the State of California, Department of Consumer Affairs, Bureau of Home Furnishings and Thermal Insulation.* California TB 603 is authoritative and well-accepted by experts in the field as a reliable test procedure for mattress flammability testing and for assessing the burning behavior of mattresses subjected to fire. In fact, as of July 1, 2007, the federal government requires that all

mattresses be tested under a protocol substantially similar to California TB 603. See 16 CFR Part 1633.

32. All four mattress fire tests performed at Intertek were video-recorded and documented by still photography. A copy of a DVD containing all four mattress tests is attached to this Affidavit as Exhibit E. The entire series of 303 photographs taken during the inspection are attached as Exhibit F.

33. As part of the testing protocol, all four mattresses were placed on a bed-frame substantially similar to the frame of "Bed B" from NHC Nashville. (See Exhibit F, Photo Nos. 4-15). In addition, as part of the testing protocol, the fires for all four mattress tests were purposely not extinguished, but, instead, the mattress fires were allowed to run their course until they self-extinguished.

34. "Test #1" was a fire test of a 100% foam mattress, without springs, as reflected in the DVD icon 3122093-001 (Ex. E) and in Photo No. 32, stating "No Springs". (Ex. F). The entirety of Test #1 is captured in video through icon 3122093-001 on Exhibit E. It is also depicted in Photo Nos. 39-54. (Ex. F). As expected, Test #1 revealed that virtually the entire 100% foam mattress and ticking were consumed in the fire testing. The post-fire remnants are depicted in Photo Nos. 55-65. (Ex. F). Just as depicted in the photographs of "Bed B" after the NHC Nashville fire, the 100 % foam mattress was consumed in the fire. Only the bed-frame and its springs survived.

35. "Test #2" was another fire test of a 100% foam mattress, without springs, as reflected in the DVD icon 3122093-002 (Ex. E) and in Photo No. 70 stating "No Springs". (Ex. F). The entirety of Test #2 is captured in video through icon 3122093-002 on Exhibit E. It is also depicted in Photo Nos. 74-83. (Ex. F). Consistent with Test #1, virtually the entire 100% foam mattress and ticking were consumed in the fire testing. The post-fire remnants are depicted in Photo Nos. 84-97. (Ex. F). Again, just as with "Bed B", the mattress was consumed in the fire and the bed-frame and its springs survived.

36. "Test #3" was a test of an exemplar Nylex II Innerspring Mattress with Convoluted Foam, as reflected in DVD icon 3122093-003 (Ex. E) and in Photo Nos. 127-128 stating "Springs." (Ex. F). The entirety of the Test #3 is captured in video through icon 3122093-003 on Exhibit E. It is also depicted in Photo Nos. 129-152. (Ex. F). As expected, Test #3 revealed that the foam and ticking of the mattress was consumed in the fire testing, but that the innerspring array remained completely intact on the bed-frame. (See Photo Nos. 133-135, 140, and 149-152). The post-fire remnants are depicted in Photo Nos. 153-187. Photo Nos. 156-166 show the innerspring array directly on the bed-frame after the fire. Photo Nos. 169-174 show the intact innerspring array after it was lifted from the bed-frame.

37. "Test #4" was another test of an exemplar Nylex II Innerspring Mattress with Convoluted Foam, as reflected in DVD icon 3122093-004 (Ex. E) and in Photo No. 219, stating "Springs." (Ex. F). The entirety of Test #4 is captured in video through icon 3122093-004 on Exhibit E. It is also depicted in Photo Nos. 220-237. (Ex. F). Consistent with Test #3, this test revealed that the foam and ticking of the mattress was consumed in the fire testing, but that the innerspring array remained intact on the bed-frame. (See Photo Nos. 226-228, 230, and 235-

237). Photo Nos. 238-243 show the innerspring array after it was lifted from the bed-frame.

38. Tests #3 and #4 both revealed that although the foam and ticking in the mattress were virtually consumed in the fire testing, the innerspring coil array survived the fire. In both tests, the innerspring component was found completely intact upon the bed frame after the fire ran its course and extinguished. Although the innerspring array was superficially discolored from its exposure to the fire, the array remained physically intact, no melting of the array occurred and there was no apparent loss of structural integrity.

39. In summary, these four tests confirmed that a Nylex II Innerspring Mattress with Convoluted Foam was not on "Bed B" at the time of the fire. Tests #3 and #4 establish that the innerspring array would survive a fire and would not lose its physical composition or have any material loss. Tests #3 and #4 also confirm that the innerspring array would have been plainly visible on "Bed B" after the fire was extinguished.

* * *

40. I have thoroughly analyzed whether a Nylex II mattress was on "Bed B" at the time of the fire. I have reviewed the Bomb and Arson photographs; I have inspected the subject bed-frame and the other evidence in Marietta, Georgia; I have reviewed the evidence inventory for the evidence stored in Nashville, Tennessee; I have inspected all of the evidence stored in Nashville, Tennessee; and I have directed and observed comparative mattress fire testing on the Nylex II mattress and a 100% foam mattress. From my investigation, I draw the following conclusions to a reasonable degree of scientific certainty in the field of engineering and fire investigation:

i. The innerspring coil array contained in the Nylex II mattress would have survived the fire at NHC Nashville. Although there would have been some superficial discoloration to the innerspring coil array and some annealing, the innerspring coil array would have unquestionably maintained its physical composition and would not have had any perceivable material loss.

ii. If there was a Nylex II mattress on "Bed B" at the time of the fire as Plaintiff alleges, the innerspring coil array would have been visible in the victim photographs (Exhibit C). It is not. Instead, the photographs show that the mattress was completely consumed in the fire and there is no evidence, indicia or remnant of an innerspring array. The results of Tests #1 and #2 – which used a 100% foam mattress – are nearly identical to those depicted in the Bomb and Arson photographs. In both cases, the mattress was consumed in the fire, the bed-frame and springs were plainly visible in the photographs and there is no innerspring array. Therefore, the only reasonable conclusion is that the mattress on "Bed B" at the time of the fire was 100% foam, or some other mattress that did not contain an innerspring array, such as a specialized mattress that contains plastic bladders and plastic tubes.

iii. Inspections of all available physical evidence recovered from NHC Nashville and a review of the evidence inventory confirm that no innerspring coil array was recovered from the fire, and that no remnants of an innerspring coil array

component were ever documented or discovered.

iv. A Medline Nylex II Innerspring Mattress with Convoluted Foam was not on "Bed B" at the time of the fire.

FURTHER AFFIANT SAYETH NAUGHT.

Dr. Harri Kytomaa

SUBSCRIBED and SWORN to before me
this 13th day of August, 2007.

Notary Public

SHARON ENGLISH
Notary Public
Commonwealth of Massachusetts
My Commission Expires
August 4, 2011